

WE CLAIM:

1 1. A method of manufacturing a disk drive formed from a head disk
2 assembly (HDA) containing at least one magnetic disk with a magnetic surface
3 and a head stack assembly (HSA) that includes a transducer head with a write
4 element for writing data to the magnetic disk and a read element for reading data
5 from the magnetic disk, the method comprising the steps of:

6 mounting the HDA in a servo track writer and moving the HSA to
7 desired positions over the magnetic disk;
8 measuring a width of the read element with the servo track writer;
9 measuring a width of the write element with the servo track writer;
10 determining a track pitch based on the measured width of the read
11 element and the measured width of the write element; and
12 writing servo tracks onto the magnetic disk at the determined track
13 pitch.

1 2. The method of Claim 1 wherein the HDA carries a controller
2 card having a microprocessor that is placed in communication with the STW
3 when the HDA is mounted in the STW and wherein the microprocessor
4 participates in the steps of measuring the widths of the read and write elements

1 3. The method of Claim 1 wherein the HDA is a bare HDA and
2 wherein the STW includes independent processing capability for performing the
3 steps of measuring the widths of the read and write elements.

1 4. The method of Claim 1 wherein the HDA contains a plurality of
2 magnetic surfaces and corresponding transducer heads, wherein the measuring
3 steps are performed for each transducer head to establish a collection of width
4 measurements; and wherein the determining steps is accomplished based on
5 the collection of width measurements.

1 5. The method of Claim 1 wherein the steps of measuring the
2 width of the read element and the width of the write element are accomplished
3 by:
4 writing a calibration track with the write element;
5 positioning the read element to a first side of the calibration track;
6 gathering amplitude data by incrementally moving the read element
7 from the first side of the calibration track to a second
8 opposite side while reading data at each incremental
9 position; and
10 calculating the width of the read element and the width of the write
11 element based on the amplitude data.

1 6. The method of Claim 1 wherein the step of determining a track
2 pitch based on the measured width of the read element and the measured width
3 of the write element is accomplished by:
4 establishing a nominal pair of width values;
5 using a nominal track pitch when the measured widths are within
6 corresponding +/- limits of the nominal pair of width values;
7 using a narrower than nominal track pitch when the measured
8 width of the write elements is narrower than the - limit of the
9 nominal width value of the write element; and
10 using a wider than nominal track pitch when the measured width of
11 the write element is wider than the + limit of the nominal
12 width value of the write element.

1 7. A disk drive comprising a head disk assembly (HDA) containing
2 at least one magnetic disk that includes a magnetic surface and a head stack
3 assembly (HSA) that includes a transducer head with a write element for writing
4 data to the magnetic disk and a read element for reading data from the magnetic
5 disk, the disk drive produced using the steps of:

6 measuring a width of the read element while the HDA is in a servo
7 track writer;

8 measuring a width of the write element while the HDA is in a servo
9 track writer;

10 determining a track pitch based on the measured width of the read
11 element and the measured width of the write element; and
12 writing servo tracks onto the magnetic disk at the determined track
13 pitch.

1 8. The disk drive of Claim 7 where the transducer head with a write
2 element for writing data to the magnetic disk and a read element for reading data
3 from the magnetic disk is a magneto-resistive transducer head.

1 9. The disk drive of Claim 7 wherein the HDA contains a plurality of
2 magnetic surfaces and corresponding transducer heads, wherein the measuring
3 steps are performed for each transducer head to establish a collection of width
4 measurements; and wherein the determining steps is accomplished based on
5 the collection of width measurements.

10. The disk drive of Claim 7 wherein the steps of measuring the
width of the read element and the width of the write element are accomplished
by:
writing a calibration track with the write element;
positioning the read element to a first side of the calibration track;
gathering amplitude data by incrementally moving the read element
from the first side of the calibration track to a second
opposite side while reading data at each incremental
position; and
calculating the width of the read element and the width of the write
element based on the amplitude data.

1 11. A method of measuring a width of a read element and a width
2 of a write element contained within a disk drive formed from a head disk
3 assembly (HDA) containing at least one magnetic disk with a magnetic surface
4 and a head stack assembly (HSA) that includes a transducer head formed from
5 the read and write elements, the method comprising the steps of
6 writing a calibration track with the write element;
7 positioning the read element to a first side of the calibration track;
8 gathering amplitude data by incrementally moving the read element
9 from the first side of the calibration track to a second
10 opposite side while reading data at each incremental
11 position; and
12 calculating the width of the read element and the width of the write
13 element based on the amplitude data.